



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,957	03/15/2004	Sarah K. Patch	GEMS8081.195	9964
27061	7590	11/13/2008	EXAMINER	
ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS) 136 S WISCONSIN ST PORT WASHINGTON, WI 53074				CHAO, ELMER M
ART UNIT		PAPER NUMBER		
3737				
NOTIFICATION DATE			DELIVERY MODE	
11/13/2008			ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

info@zpspatents.com  
rlt@zpspatents.com  
klb@zpspatents.com

**DETAILED ACTION**

1. Acknowledgement is made of the amendment filed 7/27/2007.

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 1-12** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The method claim is a non-statutory process because the steps recited are purely mental steps. This rejection may be overcome by clearly and specifically tying the method to a product or apparatus by positively reciting the product or apparatus or by positively reciting subject matter that has undergone physical transformation.

***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a

nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. **Claim 1, 13, and 20** are provisionally rejected on the ground of nonstatutory double patenting over claim 1, 8, and 16 of copending Application No. 10/864,567. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: acquiring a first set of TCT data, determining a second set of TCT data from the first set of TCT data, and reconstructing an image of the object based on the first and second sets of TCT data.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Response to Arguments***

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Examiner provides the following advice for the purpose of advancing prosecution:

Regarding claim 13, Examiner advises that the structure as recited should be amended to use the phrase "configured to" instead of "to". Furthermore, the functional limitation regarding the computer is extremely broad and should be amended to include more specific steps regarding the derivation of the second TCT set from the first TCT set.

Regarding claim 1, the term "TCT data" is not specific enough and can include anything from echo signals to pixel intensities and anything therein between. The first and second sets of TCT data should be defined better. Furthermore, more specific steps regarding the determining of the second TCT data from the first TCT data should be included.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-2, 5-9, 13, 16-19, and 24-26** are rejected under 35 U.S.C.

103(a) as being unpatentable over Kruger '025 in view of Takashima (JP363211879).

Regarding **claims 1-2, 9, 13, 16-19, and 24-26** Kruger '025 teaches a method of imaging a breast comprising the steps of: projecting high frequency energy (C4, L46-47, "...microwave or radio wave energy...") toward a breast to induce thermal expansion of tissue in the breast positioned inside hemispherical shaped imaging tank (Fig. 1, Item 14) having a fluid disposed therein, the fluid having dielectric and ultrasonic properties similar to that of breast tissue (C4, L27-34; C5, L5-8) with an energy source (C4, L49-51; Fig. 1, Item 22) to detect a tumor in the breast (C5, L11-15); receiving ultrasonic emissions from a first portion of the breast resulting from the thermal expansion (C6, L17-21, "Following each pulse of radiation...signals recorded by each of the transducer elements...") by means of one or more sensors placed along an external surface of the tank (Fig. 2, Item 33); generating a first TCT dataset from the ultrasonic emissions (Fig. 12A, Item 92); and deriving a second TCT dataset from the first TCT dataset (Fig. 12A, Item 98) with the use of a computer (Fig. 1, Item 36).

Kruger teaches "determining" or "deriving" a second set of TCT data from a first set of TCT data. Specifically, in order to plot the image, Kruger teaches acquiring a set of TCT data from one portion, storing the signals, then determining (based the first set of signals and any previous sets of signals) whether or not the data have been collected for all the sixty-four angular orientations of the imaging bowl (Fig. 12B, step 112). If the data has not been

collected for all the sixty-four angular orientations, then the imaging bowl is rotated 1/64 of a complete turn, positioning the transducers for the next set of signal measurements (Fig. 12B, step 114). This fully satisfies the language of “acquiring” a first TCT set and then “determining” or “deriving” a second TCT set from the first TCT set (also see column 14, lines 4-12).

Kruger '025 may not explicitly teach creating a second TCT dataset by extrapolating data from the first TCT set. However, in the field of tissue imaging and reconstruction, Bae et al. teach extrapolating imaging data from acquired imaging data (para [0054]). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kruger '025 to include generating a second TCT dataset image data in order to produce a higher reconstruction interval for a 3D dataset (for motivation see para [0054], last sentence).

Regarding **claims 5-8**, Kruger '025 teaches the step of impulsively and periodically pulsing the imaging object (Fig. 12B, Item 108, the step describes varying the period between a range of numbers, which can be varying “impulsively,” or set constant, “periodically.”). Also, the RF pulses are both uniform and selective (Fig. 2, Item 14, see the wave propagate in the hemispherical bowl in a uniform manner, as it is selectively sourced from the bottom of the bowl).

9. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view of Bae et al., further in view of Takashima (JP363211879).

Kruger '025 and Bae et al. teach the method of acquiring the first set of TCT data and determining the second set of TCT data. They do not disclose the method of reducing the shading of an image. However, Takashima '879 teaches a method of shading correction by superposing parabolic waveforms or triangular pulses (abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kruger '025 and Bae et al. to correct the shading of the image generated by the two data sets. Such a modification is advantageous when imaging because the image would be made clearer and easier to view by reducing the shading of it.

10. **Claims 10-12, 13-15, and 20, 21, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view of Bae et al., further in view of Ben-Haim et al. (U.S. 2002/0065455 A1). Kruger '025 and Bae et al. teach the limitations as discussed above. Kruger '025 does not teach using a TCT data set to determine a second set of TCT data through the use of a Legendre Polynomial. However, Ben-Haim '455 teaches the use of a Legendre Polynomial (Para 149). It would have been obvious to a person of ordinary skill in the art to modify Kruger '025 and Bae et al. to include the use of a Legendre Polynomial. Such a modification is useful in assisting in the imaging of the imaging object at remote locations, as evidenced by Ben-Haim '455's use of it in determining the location and orientations of remote objects (Para 157).

11. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view Bae et al., further in view of Ben-Haim '455, and further in view of Maas, III (U.S. 6,181,832 B1). Kruger '025, Bae et al., and Ben-Haim '455 disclose all of the limitations as discussed above. They do not disclose the use of a computer to reduce partial scan artifacts in an image. However, Maas '832 teaches the use of a computer to reduce motion artifacts from image data (abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kruger '025, Bae et al., and Ben-Haim '455 to include the computer to reduce the motion artifacts from image data as evidenced by Maas '832. Such a modification will yield in a more accurate image if the patient inadvertently moves (C1, L35-46).

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmer Chao whose telephone number is (571)272-0674. The examiner can normally be reached on 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/  
Supervisory Patent Examiner, Art  
Unit 3737

/E. C./  
Examiner, Art Unit 3737  
11/8/2008

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/800,957	PATCH, SARAH K.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Elmer Chao	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 27 July 2007.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2 and 4-26 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1,2 and 4-26 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 15 March 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

<b>Notice of References Cited</b>		Application/Control No.	Applicant(s)/Patent Under Reexamination	
		10/800,957	PATCH, SARAH K.	
Examiner		Art Unit		Page 1 of 1
Elmer Chao		3737		

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2007/0140541 A1	06-2007	Bae et al.	382/131
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

#### FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

#### NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.